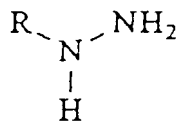


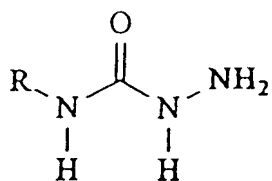


# Replacement Sheet

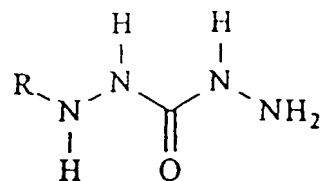
Sheet 1 of 9



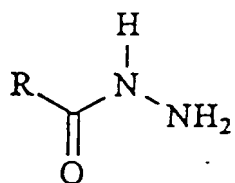
hydrazine



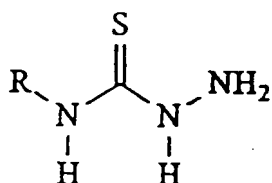
semicarbazide



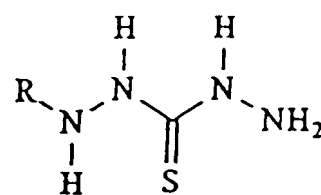
carbazine



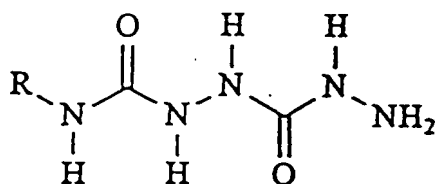
hydrazide



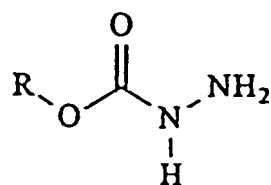
thiosemicarbazide



thiocarbazine



carbonic acid dihydrazine



hydrazine carboxylate

FIG. 1

# Replacement Sheet

Sheet 2 of 9

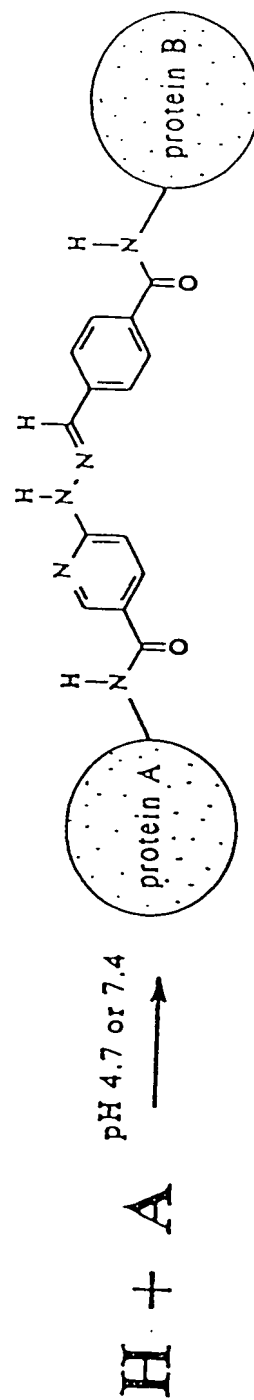
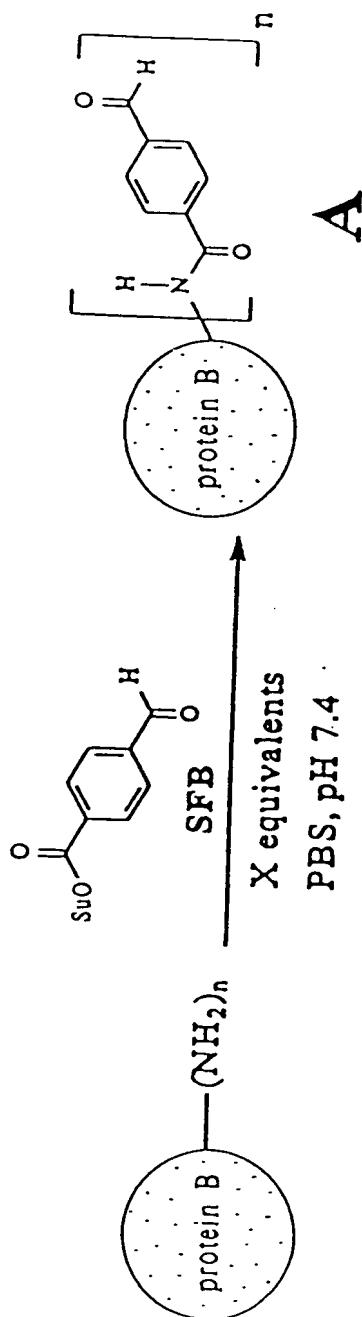
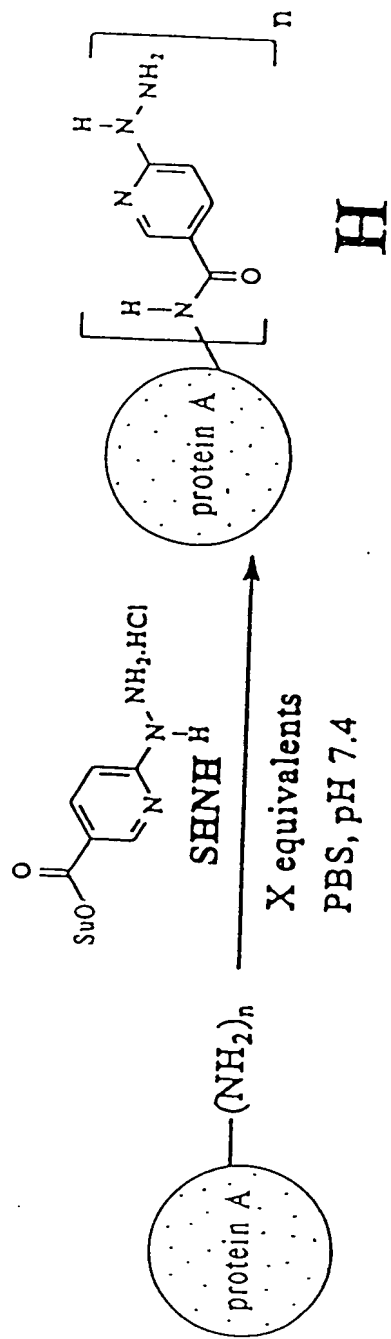


FIG. 2

# Replacement Sheet

Sheet 3 of 9

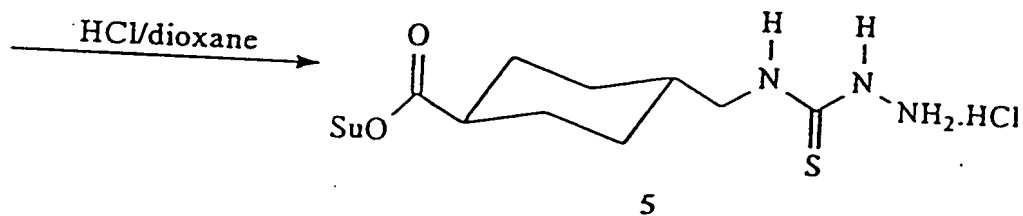
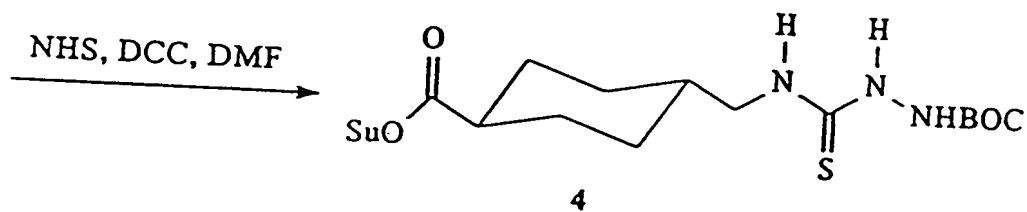
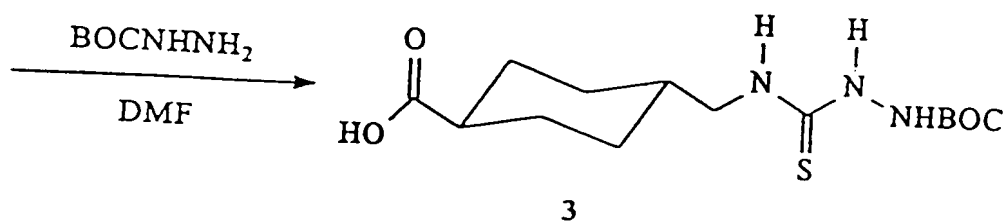
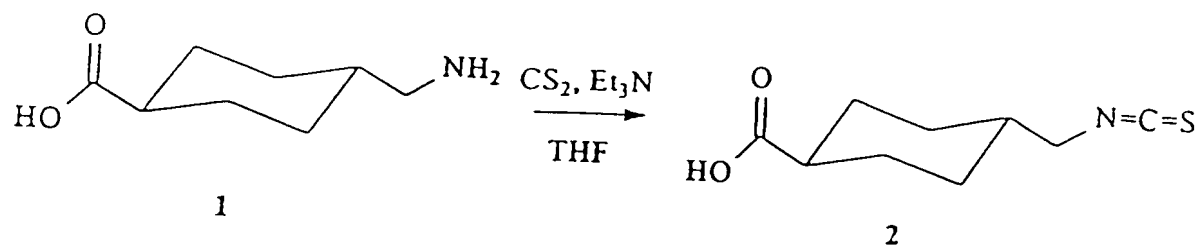


FIG. 3

# Replacement Sheet

Sheet 4 of 9

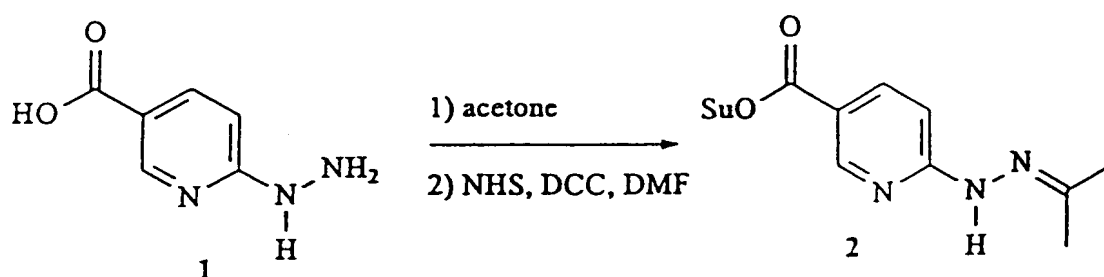
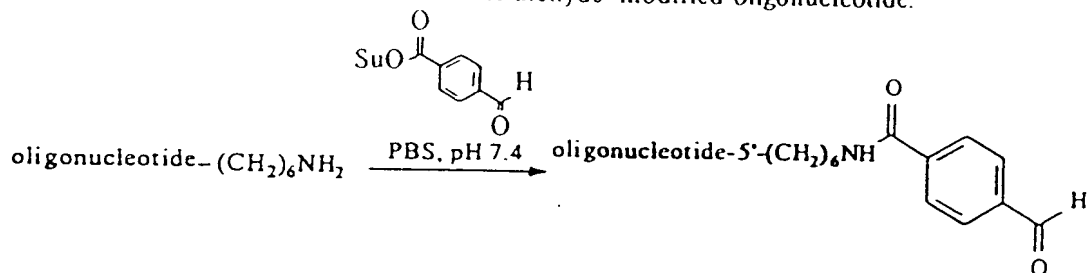


FIG. 4

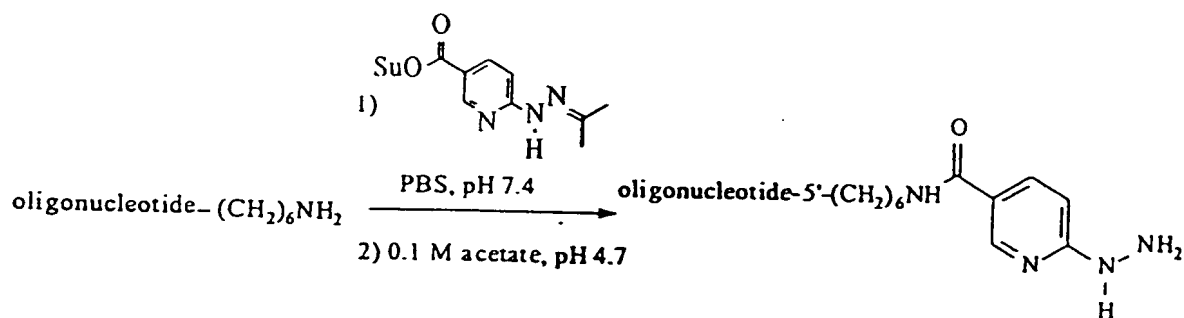
# Replacement Sheet

Sheet 5 of 9

Preparation of 5'-aromatic aldehyde-modified oligonucleotide:



Preparation of 5'-heteroaromatic hydrazine-modified oligonucleotide:



Conjugation of hydrazino-modified oligonucleotide to aldehyde-modified oligonucleotide

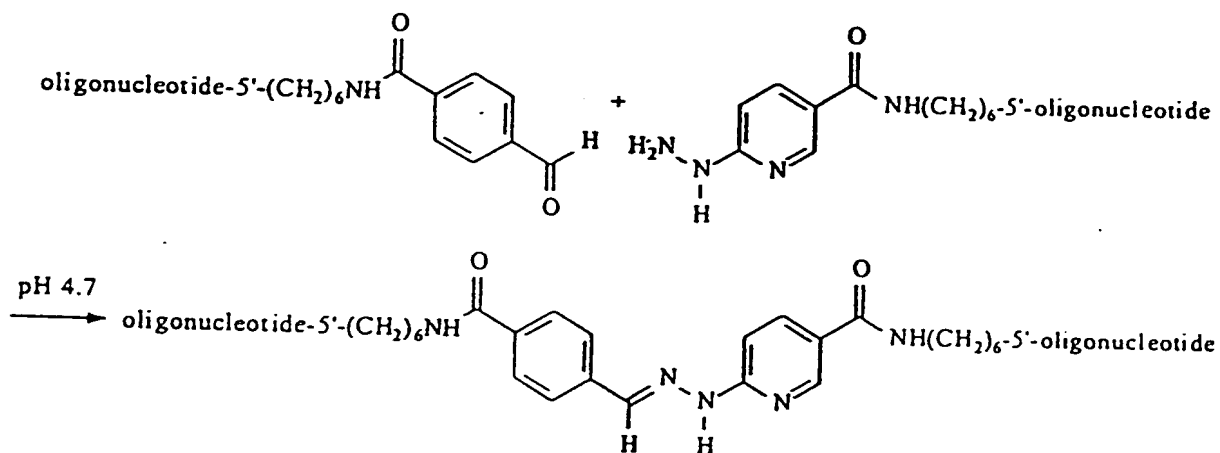
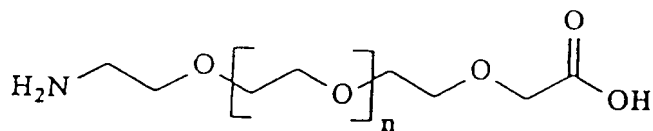


FIG. 5

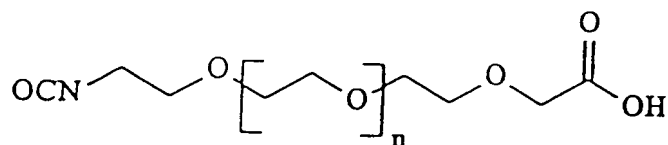
# Replacement Sheet

Sheet 6 of 9



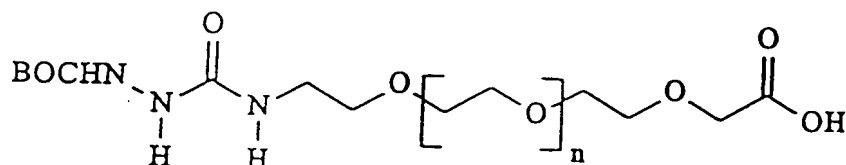
1

phosgene, Et<sub>3</sub>N, THF



2

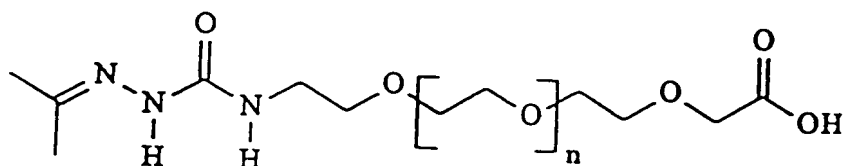
t-butyl carbazate, THF



3

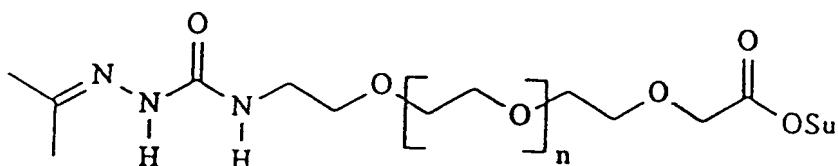
1) HCl/dioxane

2) acetone, MeOH



4

NHS, DCC, THF



5

FIG. 6

## Sheet 7 of 9

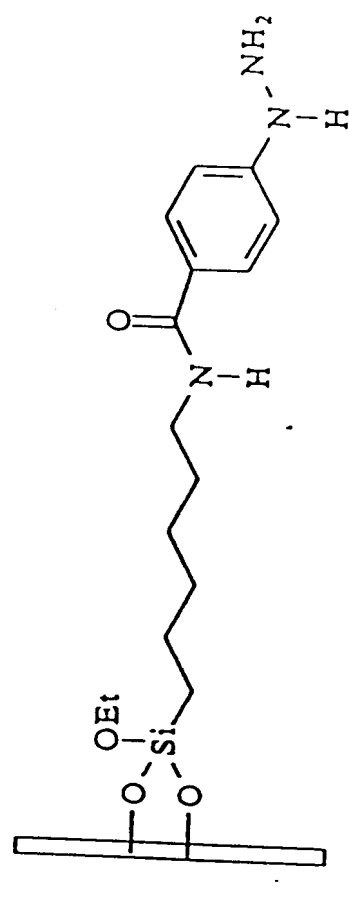


FIG. 7

glass

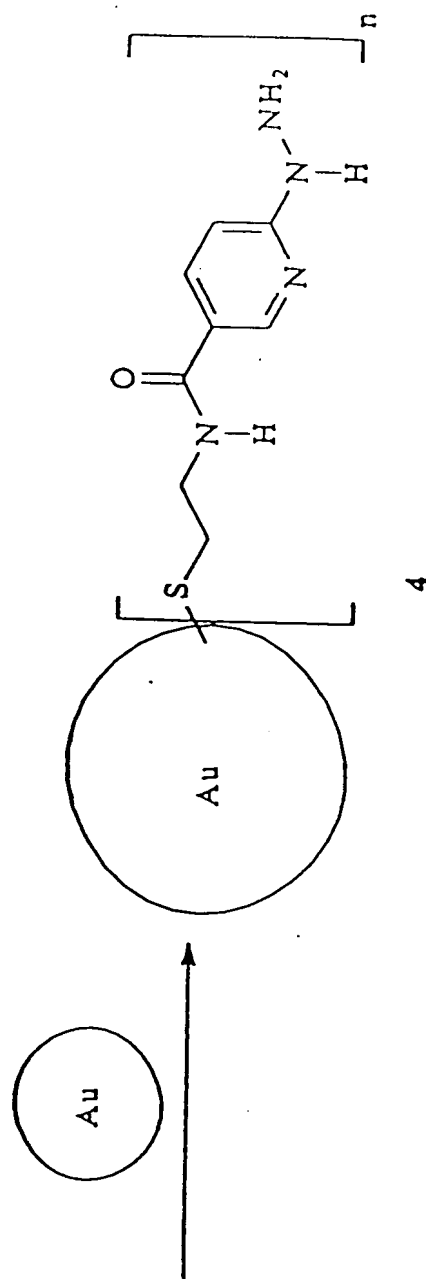
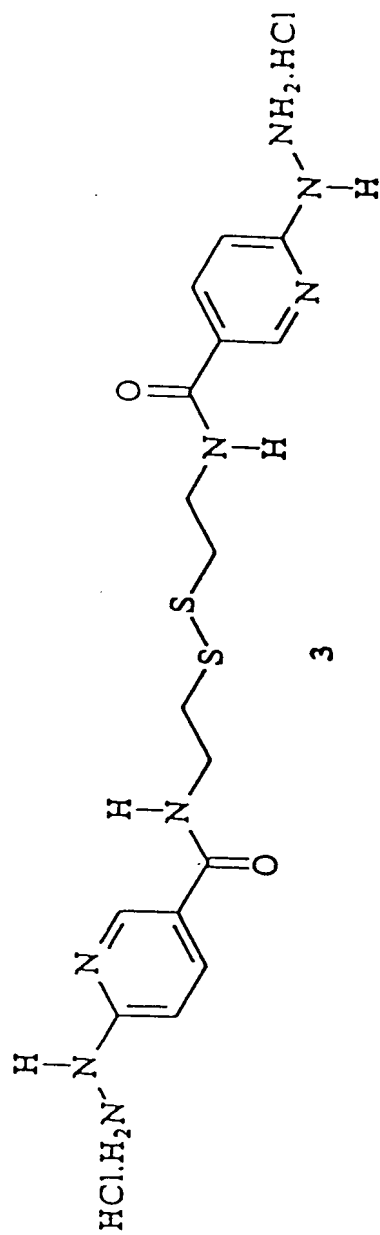
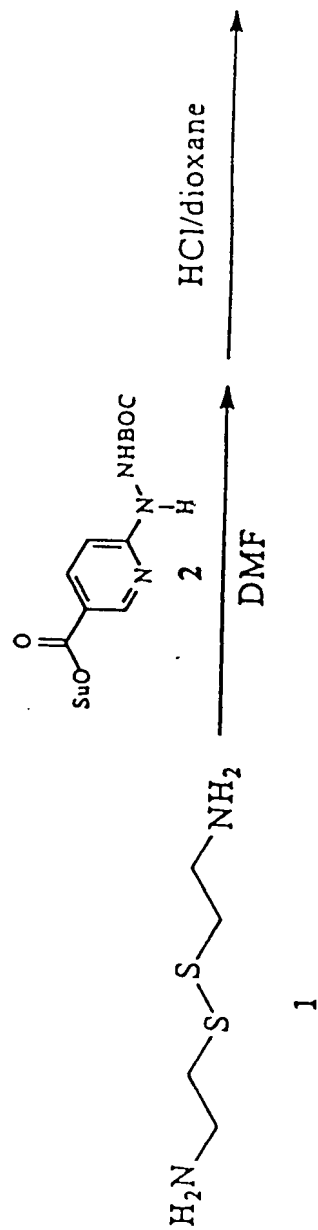


FIG. 8

